



THE SINCLAIR/TIMEX USERS MAGAZINE

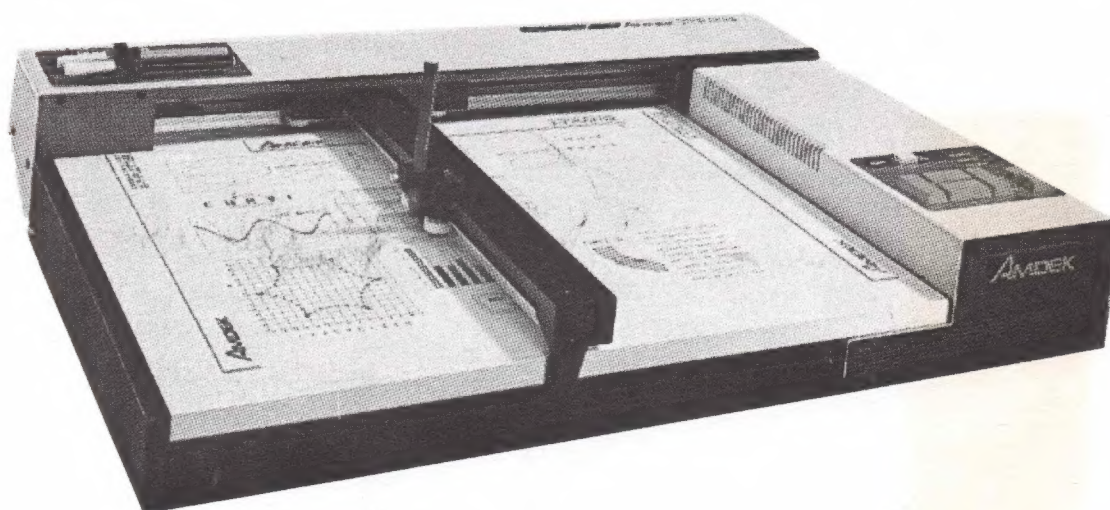
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Volume IV

MARCH 1986

Number 3

Connecting a Plotter to the TS-2068



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**Interfacing Printers to the Sinclair QL
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3224 Northwest 30th Avenue

Gainesville, Florida 32605

904/378-9000 or 462-1086 evenings

EDITOR Joe Williamson

PUBLISHER Richard Cravy

STAFF WRITERS Bill Woodward & John Monkus

SUBSCRIPTION RATES 9/1/85

Regular Subscription (U.S.) \$15.00/year

Canadian Subscription \$18.00/year

All other countries please inquire first

Published monthly

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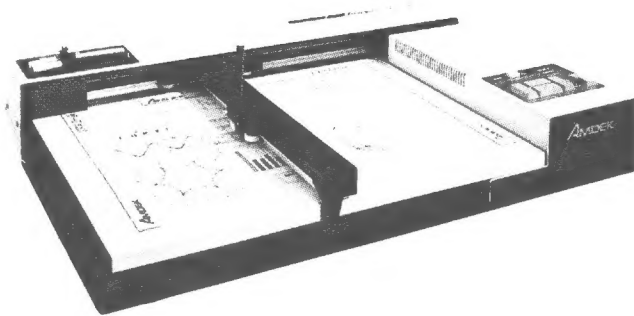
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Another Dimension in 2068 Computing...

Using a Plotter



The versatile TS 2068 computer never ceases to amaze me on its capabilities. Each of us has a pet application for their computer; mine is information and productivity. Here, I define productivity as the use of skills and resources to maximize output of a deliverable item. In a nutshell, my computing must do something, and preferably make something!

After adding a dual 3 inch disk drive unit by Amdek via a Zebra controller to my 2068, something new was lurking in my brain: plotting! I've been interested in plotting for many years, having cut my teeth on plotting Grand Daddys by Calcomp and Hewlett-Packard. In fact, in my manual on Smart Term II Telecommunications, the cover, notes, and hex/ASCII tables were each designed and printed on a "borrowed" HP 9845B computer and HP flatbed plotter.

If you are still wondering what a plotter can be used for, here is a small list of applications to stir your imagination:

1. Art, Illustration, and Graphics design
2. Bulletins, Greeting cards, Letter heads
3. Low cost Computer aided design (CAD)
4. Optical Photo digitizing
5. Publication quality graphics and Text Formatting

For optical photo digitizing, you could replace the pen with an opto-electronic sensor and feed the information into the joystick port, saved in memory to be printed on the screen or printer later.

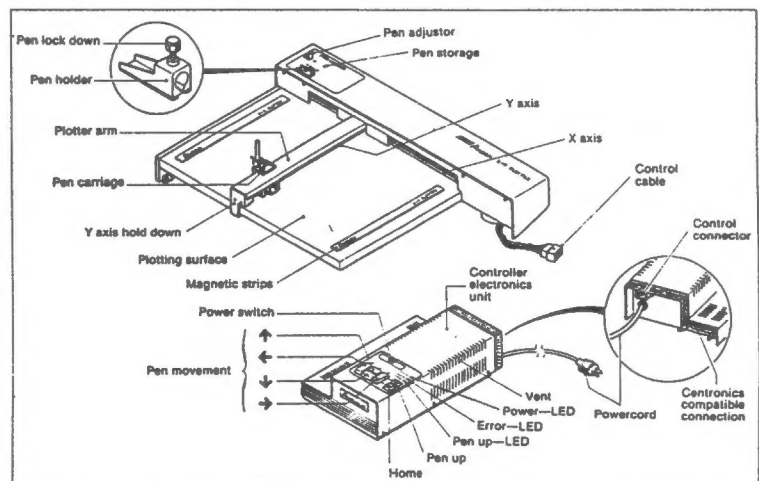
Plotter prices have generally stayed at a high level because their application

attracts the more sophisticated business or engineering user. Currently, prices have bottomed out at about \$200 and can go up to "skys the limit" prices for sophisticated CAD/CAM equipment.

My plotter is a flatbed model DXY-100 by Amdek. This plotter is currently being offered at a close-out price for \$125 from Peripherals Direct; originally listing for \$599! Initially, the concern was whether the DXY-100 would interface to the 2068. So I wrote to Amdek Corporation requesting a copy of the owner's manual so I could review the plotter's operation, instructions, and interfacing. My concern was eased when it was learned that the DXY-100 would connect to any Centronics interface. Also, the command set was easy to learn and program; as each command is activated by the LPRINT keyword.

The DXY-100 plotter has excellent solid construction (Akin to their 3 inch disc drive), with overall dimensions of 25(W)x4(H)x17(D) inches. It comes in two sections, consisting of the flatbed and electronics controller unit. The bed contains the mechanics consisting of two stepper motors and guide wires to move the arm and pen in an X & Y direction. The up/down motion of the pen is controlled by a solenoid.

The controller portion contains the power supply, central processor, ROM software, and two open ROM slots. These slots can be filled with 2716 EPROMs to provide custom programs, character sets,



etc. An optional ROM is also available which provides six additional commands to draw circles, arcs, and perform cross-hatching. These commands are useful for pie and bar chart plotting for business type graphics. Three pens and holders are supplied, but you can use most any felt tip or ball markers which will fit into the holder opening. Three magnetic strips are supplied as paper hold downs. The bed will take paper or transparencies up to 14 x 18 inches. It comes standard with parallel interface and command syntax in firmware, including a self-test mode. The following listing provides the command set:

List of Drawing Commands for the DXY-100

COMMAND	INPUT FORMAT	FUNCTION
D (DRAW)	D x1,y1,x2,y2xn,yn	Draws lines from the present pen position to (x1,y1), from (x1,y1) to (x2,y2)....., from (xn-1, yn-1) to (xn,yn) respectively. X must be an integer value <= 3600. Y must be an integer value <= 2600. The X and Y values are multiplied by .1 mm to get actual distance. The values must be absolute coordinates. Draw moves the carriage with the pen down.
M (MOVE)	M x,y	The same as "D" above except that the pen is up.
I (Relative)	I x1,y1,x2,y2xn,yn	Draws lines from the present position to the relative coordinates (x1,y1), from the new position to the relative coordinates (x2,y2)..... Coordinates are relative to the previous point. Ranges for X and Y are the same as D above. The carriage moves with the pen down.
R (Relative)	R x,y	Same as function I above except that the pen is up.
L (Line type)	L p	If p=0 then solid lines are drawn. If p=1 then dotted lines are drawn. Once assigned line type does not change until reassigned. The LINE SCALE command can come either before or after this command. Default is p=0.
B (Line scale)	B l	Assigns the ratio of line to space for dotted lines. l <=255. Default is l = 30.
X (Axis)	X p, q, r	Draws an axis of coordinates which is parallel to the y axis if p=0, or the x axis if p=1. q is the distance between the scale marks. r is the number of scale marks drawn.
H (Home)	H	Move the pen back to the home position with the pen up. If an error occurs, the error LED is turned off.
S (Alpha Scale)	S n	Assigns the size of characters and marks. 0 <= n <= 15. Character size is .7(n+1)mm by .4(n+1)mm. Character spacing is .3(n+1)mm. Default is n=3.

Q (Alpha Rotate)	Q n	Sets the angle at which characters are drawn. n is 0, 1, 2, or 3 and rotate the characters drawn 0, 90, 180, or 270 degrees respectively. Default is n=0.
P (Print)	P c1, c2,...cn	Draws characters c1, c2,...cn.
N (Mark)	N n	Draws a scale mark at the current position of the pen. n is the length of the mark.
U (User)	U n	Allows the user to assign an optional set of characters. n=1 to 4. EXTROM 1 has U1 and U2. EXTROM 2 has U3 and U4. Without the expansion roms installed, this command causes an error.
(ESC) (Exchange)	(ESC) n CHR\$(27)+"n"	Changes the mode. n is a number 0 to 2. n=0 is plot mode. n=1 is printer mode. n=2 is self test mode. Default n=0.

PROGRAM #1

```

100 REM *** M,D COMMAND ****
110 A=300: REM SIZE
120 FOR X=1500 TO 0 STEP -50
130 FOR Y=1700 TO 200 STEP -50
140 IF Y <> X THEN 200
150 LPRINT "M";X;",";Y
160 LPRINT "D";X+A;",";Y
170 LPRINT "D";X+A;",";Y+A
180 LPRINT "D";X;",";Y+A
190 LPRINT "D";X;",";Y
200 NEXT Y
210 NEXT X
220 LPRINT "H"
230 END

```

PROGRAM #2

```

100 REM *** SWIRLING ***
110 PI=3.1416
120 X=1300:Y=900
125 D=0
130 LPRINT "M";X;",";Y+D
140 FOR N=0 TO 30
150 FOR I=0 TO 2*PI STEP PI/100
160 D=D+.1
170 A=INT(D*SIN(I)+X)
180 B=INT(D*COS(I)+Y)
190 LPRINT "D";A;",";B
200 NEXT I
210 NEXT N
220 LPRINT "H"
230 END

```

With a plotter, artistic aficionados can explore new horizons in computer art. Besides mathematical of random based plotter art, interactive plotter art programs become possible. You can write programs to allow movements of a joystick or cursor keys to control the plotter's pen movements.

Barry Carter
Detroit, MI

Targets Five

A Game for the TS-1000

TARGETS FIVE is a program that will require a RAM Pack on your TS-1000. It is a slow-acting routine of an arcade type of game, but you can have a lot of fun with it. You get four shots to shoot down five targets. It can be done.

Nested loops such as 510-580 are time consuming. But the action can be speeded up by adding a line like:

```
515 IF CODE A$(L)= 0 THEN NEXT L
```

This will eliminate unnecessary scanning. Otherwise, it is a "bare bones" routine that you may embellish yourself.

There will be a TS-2068 version in an up-coming issue of QuarterS Magazine in my "Basic Tutor" column.

```
4 FAST
5 PRINT TAB 8;"RULES OF GAME"
,TAB 7;"-----"
10 PRINT ,,"-GAME STARTS WITH
5 TARGETS"
15 PRINT "-PLAYER MAY USE UP T
0 4 SHOTS"
20 PRINT "-SHOT LAUNCHER SWEEP
S OVER"," FIRING RANGE 2 1/2 T
IMES"
25 PRINT "-OBJECT: TO WIPE O
UT TARGETS"
30 PRINT "-FIRIE USING THE M (M
ISSILE) KEY"
35 PRINT ,,TAB 11;"GOOD LUCK"
40 PRINT AT 20,3;"PRESS ENTER
KEY TO START"
45 INPUT Z$
50 CLS
92 LET W=0
94 LET S=0
96 LET B=13
98 LET K=1
100 LET AA=PEEK 16396+256*PEEK
16397
105 RAND
110 DIM A$(5,3)
120 FOR N=1 TO 5
130 LET A$(N)=" "
140 NEXT N
190 CLS
195 FAST
200 FOR L=1 TO 5
210 PRINT AT L, INT (23*RND)+3;A
$(L)
220 NEXT L
230 SLOW
240 FOR T=1 TO 20
```

```
250 NEXT T
300 LET S=S+1
310 IF S>70 THEN GOTO 600
320 LET B=B+K
330 IF B<2 OR B>26 THEN LET K=-
K
340 PRINT AT 20,B;" [ ] ";TAB B-
1;" "
350 LET C$=INKE Y$
355 IF C$="M" AND RND>.2 THEN G
OTO 400
360 GOTO 300
400 LET W=W+1
420 FOR M=18 TO 0 STEP -1
430 PRINT AT M, B+1;" [ ] ";TAB B+1;
" "
440 NEXT M
445 PRINT AT 0, 0;"SHOTS= ";W
450 FOR T=1 TO 40
460 NEXT T
500 FAST
510 FOR L=5 TO 1 STEP -1
520 LET H=0
530 FOR C=3 TO 28
540 IF PEEK (AA+33*L+C+1)=131 T
HEN LET H=H+1
550 IF H=3 THEN GOTO 580
560 NEXT C
570 IF H<3 THEN GOSUB 610*L
580 NEXT L
590 LET X=CODE A$(1)+CODE A$(2)
+CODE A$(3)+CODE A$(4)+CODE A$(5)
591 IF X=0 THEN GOTO 595
592 IF W=4 THEN GOTO 600
593 CLS
594 GOTO 190
595 CLS
596 PRINT AT 8, 6;"YOU HIT ALL T
ARGETS"
598 GOTO 604
600 CLS
601 IF S>65 THEN PRINT "LAUNCHE
R RAN OUT OF FUEL"
602 IF W=4 THEN PRINT "YOU HAD
YOUR 4 SHOTS"
603 PRINT AT 8, 6;"YOU DID NOT M
AKE IT"
604 PRINT ,,TAB 3;"TO PLAY AGAI
N PRESS Z KEY"
605 SLOW
606 IF INKEY$="Z" THEN GOTO 50
607 GOTO 606
610 LET A$(1)=" "
620 RETURN
1220 LET A$(2)=" "
1230 RETURN
1830 LET A$(3)=" "
1840 RETURN
2440 LET A$(4)=" "
2450 RETURN
3050 LET A$(5)=" "
3060 RETURN
```

WARREN FRICKE
273 CANTON STREET
DEPEW, NEW YORK 14043

Using Parallel Interface Printers With the QL

Technology Research and other QL hardware manufacturers have introduced centronics parallel interfaces to allow the QL to drive parallel printers, which are more common than serial interfaced printers.

Some information on how to install these parallel interfaces to work with the QL's software is given in the INFORMATION section of the QL manual. Additional information may also be supplied by the interface manufacturer. To clarify and amplify some of that information, the following has been compiled.

To use the parallel interface in BASIC programs, call for it exactly as you would the SER1 and SER2 serial interfaces. That is, specify a channel to open, followed by the peripheral designation PAR. Examples:

```
10 OPEN #3, ser1      (opens channel 3 to
                      serial port 1)
```

```
0 OPEN #5, par        (opens channel 5 to
                      parallel port)
```

To install the parallel interface to work with Quill, Archive, Easel, or Abacus, turn on or reset the computer without any cartridges in either microdrive. Select F1 or F2 for monitor or TV. Then...

1. Put backup copy of Quill in mdv1 (or flp1 for disk). Load and run INSTALL BAS. (If using a disk system, first specify that the disk system is to act like microdrives. This is done with FLP USE MDV on the Technology Research unit. Then load and run the install program.)
2. Specify where the new printer installation data is to be saved by the program when it prompts for it.
3. Press the SPACE BAR to indicate a parallel interface will be installed.
4. Select the appropriate printer from the menu provided.
5. Select EDIT by pressing F2 then use the cursor keys to change PORT: NONE to read PORT: PAR.

6. ESC to end editing then F5 to save the new installation information on your microdrive or disk.

7. Exit the install program and RESET the computer before trying to use any other program.

If everything has been done right, any print call from within Quill or the other software will now direct output to the parallel interface. A separate microdrive cartridge set up for serial interfaces should be kept for using serial printers.

A FINAL NOTE: There is another alternative. There are serial to parallel cables available for about \$45-50 from English Micro Connection which allows the user to plug one end in SER2 and the other end into a parallel printer. No other installation procedures are necessary since the computer still thinks it is dealing with a serial interface and printer.

-- Richard Cravy

The January issue of SUM contained a program for solving Jumbled Word Puzzles. Robert Fischer went to work and developed a much shorter version of the BASIC program which will also allow words of any length up to 16 characters (but only 6 fit in the on-screen box). To start over, push the zero key. To communicate with Mr. Fischer, write to 221 Scoggins Street, Summerville, GA 30747.

```
10 POKE 23658,8: BORDER 0: PAP
ER 0: INK 7: CLS: PRINT AT 2,9:
INK 2:"S H U F F L E": INK 7: P
LOT 72,103:: DRAW 104,0: DRAW 0,
-25: DRAW -104,0: DRAW 0,25: PRI
NT AT 20,6: INK 1:"ENTER 2 TO 6
LETTERS": INPUT B$: LET A=LEN B$
110 PRINT AT 20,3:"PRESS ANY KE
Y TO CONTINUE ",TAB 10:"0 RESTAR
TS": LET Z#=B$: LET C#="": FOR I
=1 TO A
140 LET R=INT (A*RND)+1: IF B$(
R)="" THEN GO TO 140
160 LET C#=C#+B$(R)+" ": LET B$(
R)="" : NEXT I: PRINT AT 10,16-
A: INK 6:C#
220 LET B#=Z$: PAUSE 0: LET A#=
INKEY$: GO TO 110-(100 AND A#=""
)
450 SAVE "SHUFFLE" LINE 10
```

Creating Additional Colors on the 2068

If you have ever felt limited on the 2068 with only eight colors, here is a way to create up to fifteen NEW colors and twelve new shades of the ones you already have. Whats the catch? Well, actually there are two. One, you are limited to the new color being the size of the 8 x 8 character grid. Two you have to be using an RGB monitor.

We are not actually creating a new color, we are only making our eyes think they are seeing new color. The first thing we must do is to re-create the graphic character they forgot to bring up from the TS 1000. Remember the gray (first clue) "hash" mark they had? In the 8 x 8 grid, the pixels alternated white and black. With their close proximity, the character as a whole appeared to be gray. With this character on the 2068, if we make the INK yellow and the PAPER red, we get orange.

We need an RGB monitor to see this because of its increased resolution over composite monitors. You can try this on a composite monitor, but most likely you will only get squiggly color lines over this character.

To generate the character, you need to define a graphic character as shown in chapter 18 in the 2068 manual. Use BIN 10101010 = 170 decimal and BIN 01010101 = 85 decimal alternately. Enter the program as shown using the GRAPHICS A where you see the "hash" mark. You can try only making this half of a character to create higher res. graphics of your own.

The new colors can really brighten up your displays and give a new dimension of color possibilities on the 2068. For those who built the RGB interface shown last month now have the opportunity to really see the difference between their old composite screen and an RGB one!

Joe Williamson

```
10 FOR n=0 TO 7: READ a: POKE
USR "a"+n,a: NEXT n
20 DATA 170,85,170,85,170,85,1
70,85
30 FOR n=1 TO 10
40 PRINT PAPER 1; INK 1;"██"; I
NK 2;"██"; INK 3;"██"; INK 4;"██
"; INK 5;"██"; INK 6;"██";
50 PRINT PAPER 2; INK 2;"██";
INK 3;"██"; INK 4;"██"; INK 5;"██
██"; INK 6;"██";
```

```
60 PRINT PAPER 4; INK 4;"██";
INK 5;"██"; INK 6;"██";
70 PRINT PAPER 5; INK 5;"██";
INK 6;"██";
80 PRINT PAPER 6; INK 6;"██";
90 NEXT n
95 PRINT ""
100 FOR n=1 TO 10
110 FOR m=1 TO 8
120 PRINT PAPER 0; INK m;"██"; P
APER m;"██"; PAPER 7;"██"; "██";
125 NEXT m
130 PRINT
140 NEXT n
```

Celestial Basic

(Eris Burgess's CELESTIAL BASIC is a collection of astronomy programs originally written for the Exidy Sorcerer computer. These programs were rewritten for the Apple II and published under the above title in 1982 by Sybex. In 1983 another rewrite adapted some of the more important programs to Timex Sinclair BASIC. The result was MORE USES FOR YOUR TIMEX/SINCLAIR 1000: ASTRONOMY ON YOUR COMPUTER, 20 programs which run on the TS 1000, ZX 81, and Spectrum computers.)

PLANET FINDER plots the positions of the sun, moon, and planets for any date, time, and location. The solar system objects are shown within an area of the sky approximately 30 degrees wide by 30 degrees high - a size appropriate to the display of one zodiacal constellation at a time. The "window" on your monitor screen is nearly identical to the field of view of a 35mm camera.

The user first enters local longitude. Then the time for the display is requested: year, month, and date. Local time information is not necessary. The display is based more on the actual configurations of the celestial bodies than on the circumstances of observation.

The conventions used to identify the object to be viewed are as follows: Venus through Pluto are identified by their initial letters. The sun is an "O", and Mercury is a "+" sign to avoid confusing it with Mars. The moon is shown as a ")" regardless of its phase.

The first display shown is a brief table of data recalling the display date, the object chosen, and its right ascension and declination (the astronomer's longitude and latitude). An opportunity is given to COPY the screen information before continuing with the sky display.

The graphic display which follows repeats the date and object information along with the name of the zodiacal constellation in which the desired object is found on that date. Below this information is the view of the sky. The graphic depiction of the constellation is good enough that experienced observers would have no trouble recognizing it even if it were not identified. The object is displayed in its proper position within

the constellation, along with any other planets which happen to be in the same area of the sky. Once again the option to COPY the screen is given. The user is asked whether the display of another planer or date is desired.

The program can be typed in from the Sybex book, or a tape (\$12.00) is available to eliminate hours of typing, proofreading, and editing. Contact Sybex Inc., 2344 Sixth Street, Berkeley, CA 94710 for the book. For the tape and an occasional "Celestial BASIC User's Newsletter," write directly to author/developer Eric Burgess at S & T Software Service, 13361 Frat1 Lane, Sebastopol, CA 95472.

Duncan R. Teague

A Beginner on the QL

I took the Quantum Leap! I liked the computer so much I bought the company! No, I didn't have the sixteen million dollars.

All kidding aside, I liked the QL so much I took it and my printer to my daughter's to help her finish a term paper. After we had the paper ready to turn in the next day, I decided to leave my QL and printer with her until I could get her a set.

We were using the QL, Spirit 80 printer and a Sears 12" B&W Monitor/TV with a monochrome monitor cable, plugged into a three outlet surge protector w/switch. The whole rig can be switched off or on at one time.

Loading was simple. Switch on. Insert microdrive program cartridge in drive 1 and a file or formatted cartridge in drive 2. To boot, press F1 or F2 and watch program load in about 10 seconds. If you do not remember the name of your document, press F3 (command), "1" (LOAD), and "?" (directory). The directory with number of unused sectors is displayed in the upper left corner. Type in File name and ENTER. File is loaded in a few seconds. NO CASSETTE RECORDER or TAPES to worry with. NO "TAPE LOADING ERROR".

Before we finished, she said, "Daddy, Quill has made me hate Tasword and the 2068!" The next day, I took out a loan and sent for her a QL and printer. Bob Dyl of English Micro Connection had my QL delivered on the 18th of December.

I am editor of the Stroke Club bulletin and needed a user friendly filing system that would keep all club records and print mailing labels. I used to print my labels on the TS-2068 with a brute force BASIC program. That is because I could never make heads or tails of Masterfile.

When I ordered the QL from EMC, I told Bob Dyl that I needed to drive a parallel printer. He sent the QL with a Kempston Centronics interface. I had to have my RGB cable made locally.

The print driver, for most printers, is on the program cartridge and very simple to modify for the Spirit 80 printer. My printer was up and running in no time.

Since most of my time has been spent using Quill, my reactions to the QL are flavored by it. If you are wanting to write letters and memos of 1000 words or less (about 5 double spaced pages) the basic QL and Quill is fine; otherwise the QL needs more on-board memory.

I have a mental handicap caused by two strokes. I have to have a word processor in order to write. The QL and Quill have made my life infinitely easier than the TS 2068 and Tasword or Wafadrive and SpectralWriter.

My early problems with the QL stemmed from mental handicaps. Richard Cravy and others have steered me in the right direction and I have forgotten some of the early obstacles I had to overcome.

I find the QL Users Guide with its 400

pages very easy to understand and follow. I think a beginner will find SUPERBASIC easier than BASIC to program in. I find it that way. I have entered all the stroke club names and addresses into MAIL LIST and will try to print the mail labels from it for next month's mailing. At the present my printer is 50 miles away at my daughter's.

The biggest factor in my buying the QL was economic. When I priced what it would cost me to upgrade my 2068 to what was standard equipment on the QL, I could pay for the QL and have a 32 bit computer to boot. The straw that broke the camel's back was seeing the QL in RGB (80 column) on a SEAR's Total Video System. There were no squiggles. The Sear's B&W monitor is just as sharp in monochrome.

My daughter is in her senior year, last semester at the University of Florida. She is a beginner at computers but took to the QL like a "duck to water" after that day when I helped her get her class paper prepared to turn in. I typed (two finger) while she wrote. When she finished the writing she (a touch typist) finished typing the last 6 of 17 double-spaced pages. The two most important things I taught her was how to hyphenate and how to call the HELP FILE.

My advice, unless you are a game addict, is to buy a QL when you are ready to move up from your present computer.

-- Bill Woodward

ADDITIONAL NOTE: I had 40 cartridges to FORMAT. In BASIC type in AUTO and get automatic line numbering starting at 100. You can then use this program to format them with:

```

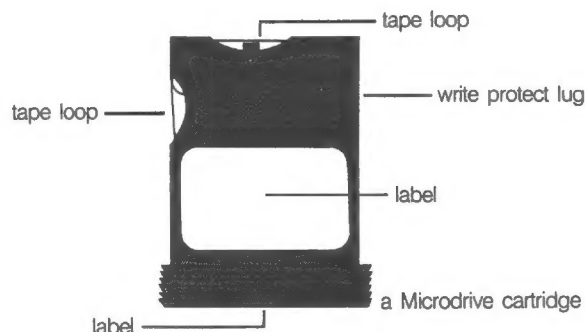
100 paper 255
110 for x=1 to 10
120 format mdv1_
130 next x
140 cls
150 paper 7,2
160 for x=1 to 10
170 format mdv2_
180 next x
190 cls
200 goto 100

```

Insert a blank cartridge in both mdv1_ and mdv2_. The light will shift from 1 to 2 and the screen will change color about every five minutes. You can even have the

QL sound off as it changes from mdv1 to mdv2 and return.

-- Bill Woodward



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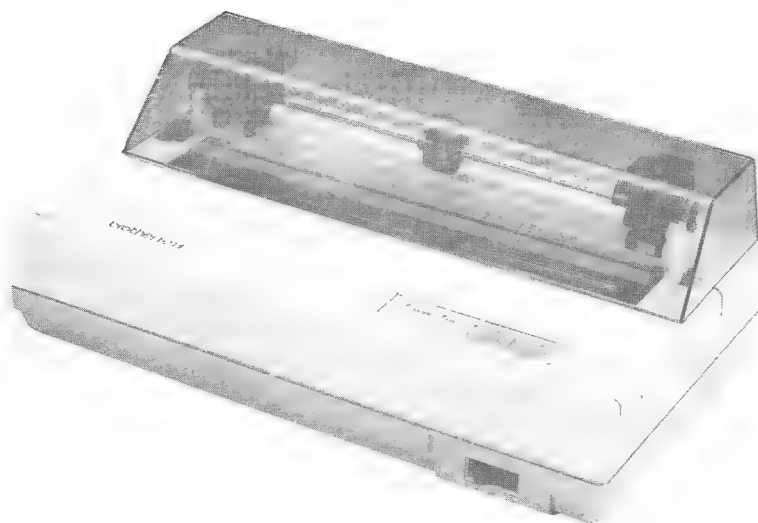
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shown with optional tractor feed

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ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDe fgh i 12345
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDEFGHij klmnop1234567890
ABCDe fgh i 12345
ABCDe fgh 123 ABCDe fgh 123

actual print samples

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